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ABSTRACT

The papers presented at this conference review current research on effective educational practices for low-achieving students and identify those that might be applied to programs funded under Chapter 1 of the Education Consolidation and Improvement Act of 1981 (the successor legislation to Title 1 of the Elementary Secondary Education Act of 1965). This paper reviews the literature about the effect on educational outcome of instructional setting, that is, the effect of pullout versus in-class instruction. Focusing on the early grades, the paper begins with the question: What do we know about the nature of instruction in Title I and Chapter 1 programs? It then provides answers to the following three questions: (1) What do the legislation, Congress, and the United States Department of Education say about the use of pullout and other models of instruction? (2) What is the impact of pullout instruction on students' achievement in reading, language arts, mathematics? and (3) What other effects of pullout versus in-class programs have been noted in the literature? Following these discussions, the paper briefly describes key variables and issues to consider in designating compensatory instruction programs, and finds that, despite a great deal of confusion and contradiction in the literature on the subject, it is safe to conclude that: (1) setting is not directly responsible for student outcomes; (2) it is the issue of effective practices, not setting, that deserves the attention of educators; and (3) it is important for educators to study what goes on within the different settings and how regular and compensatory instruction can be woven together to improve student performance. A list of references is appended. (PS)

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INSTRUCTIONAL SETTING: KEY ISSUE OR BOGUS CONCERN

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INSTRUCTIONAL SETTING: KEY ISSUE AND BOGUS CONCERN

Research conducted during the past decade, particularly the major Federal studies of the Elementary and Secondary Education Act (ESEA) Title I and the Emergency School Aid Act (ESAA), has revealed a great deal about the nature of compensatory education. Secondary analyses of the data collected in these studies and the large number of discussions and debates which they prompted have also been informative, as have the results of more modest studies conducted at state and local levels. Despite the wealth of information gained, however, much remains to be learned about the effect which various instructional methods have on the performance of the academically disadvantaged.

One issue that we know surprisingly little about is the effect of instructional setting, that is, the effect of pullout versus in-class instruction. Put simply, pullout instruction means that students receive their compensatory instruction outside the regular classroom. In-class instruction means that they receive it in the regular classroom environment. Research has clearly shown that Title I provided predominantly pullout instruction. Although national data are not yet available, it appears that pullout is still the preferred method of instruction under Chapter 1, Title I's replacement. Critics of pullout have argued that it has been used in large part to demonstrate compliance with certain program regulations and that it is not justified on pedagogical grounds. Among other things, they have also argued that pullout diminishes cooperation between regular and compensatory instructors, that it reduces teacher responsibility for pupil progress, that valuable content is lost when pullout instruction is received, that it unnecessarily labels and stigmatizes students, and that it leads to resegregation. Proponents have countered that pullout provides the opportunity for more concentrated instruction delivered to smaller groups of students by better-trained teachers. Thus the lines have been drawn, with both sides contending that they have convincing evidence for the superiority of their favorite strategy. What is disconcerting, however, is that the proponents of pullout have comparatively little evidence to justify its widespread use and the critics of pullout would be similarly hard-pressed to justify a wholesale shift to in-class instruction.

This paper reviews the somewhat sparse and sometimes confusing literature surrounding this instructional setting debate. It begins with the question: What do we know about the nature of instruction in Title I and Chapter 1 programs? It then provides answers to the following three questions: 1) What do the legislation, Congress, and the U. S. Department of

Education say about the use of pullout and other models of instruction?; 2) What is the impact of pullout instruction on students' achievement in reading, language arts, mathematics?; and 3) What other effects of pullout versus in-class programs have been noted in the literature? Following these discussions, the paper briefly describes key variables and issues to consider in designating compensatory instruction programs.

Because the majority of Chapter 1 dollars are allocated to elementary schools, this review focuses on these early grades. Likewise, because the large number of dollars invested in Chapter 1 provide remedial instruction in reading, language arts, and mathematics, these content areas are emphasized.

Types of Students Served and the Nature of Instruction

The best information on who is served by Federally funded compensatory education programs and the types of services received by them continues to come from a set of studies conducted in the mid-to-late 1970s. Breglio, Hinckley, and Beal (1978) and Carter (1984), reporting on the results of the Sustaining Effects Study conducted by Systems Development Corporation (SDC), provide good information on the economic status and achievement level of Title I participants. They suggested that for the period of their research (i.e., three school years beginning in 1976-77) Title I was serving about 15 percent of all elementary grade children in the United States. Among low-achieving students, 45 percent received compensatory education and 54 percent did not. Among economically poor students, about 40 percent received compensatory education and 60% did not. The Sustaining Effects Study researchers also found that more non-poor than poor students and more regular-achieving than low-achieving students were receiving Title I while about 2,000,000 low-achieving students were not receiving any compensatory education. Finally, they found that relative to their number in the total student population, the students most likely to receive compensatory education services were Hispanic and Black, and were in large cities and rural areas.

On a somewhat smaller scale, Vanecko, Ames, and Archambault (1980) reported that 65 percent of the Title I students in the 13 districts they were studying read one year or more below grade level (i.e., were poor achievers), 69 percent received free or reduced-priced lunch (i.e., were poor), and 53 percent were minority group members. They also reported sizeable variations across districts for each of these measures, particularly minority group membership.

With regard to the nature of services received by these students, a variety of issues might be raised. Wang et al.

(1978), for example, in one of the reports emanating from the Sustaining Effects Study, provide impressive detail on the amount of instruction received by compensatory education (CE) and non-CE students in various types of schools, the grouping patterns for this instruction, the approaches to instruction used in these groups (i.e., whether lesson plans are used, the type of feedback provided to students, the type of special equipment used, the teaching approaches used, etc.), the type of instructor providing this instruction, the setting for instruction, and so forth. Readers interested in specifics on these issues are referred to this lengthy report. For purposes of this paper, and more in keeping with the National Institute of Education (NIE; 1977) report on compensatory education services, the following subset of issues will be addressed: (1) the amount of instruction received; (2) the type of grouping used for instruction; (3) the type of instructor providing the instruction; and (4) the setting for instruction.

Amount of Instruction

NIE (1977) reported that three-quarters of Title I funding goes to instructional services, about five percent goes to auxiliary services, and the remaining 20 percent is allocated to several categories of other expenditures which vary from district to district. Viewed from another angle, about 95 percent of Title I districts offer remedial reading or language arts as part of their compensatory education activities and about 45 percent offer remedial mathematics. No more than about 10 percent of the districts offer any other particular type of instructional activity.

With regard to the amount of instruction received, NIE (1977) reported that students spent about three and three-quarters hours per week in compensatory language arts and about 3 hours per week in compensatory mathematics. Archambault and St. Pierre (1980), describing the language arts findings of the Title I Demonstration Study, reported somewhat smaller amounts of time for compensatory instruction. They also reported that although Title I students received more total language arts instruction (i.e., regular and compensatory instruction combined) than non-Title I students in the same school, Title I students received less regular classroom instruction. Thus, they concluded "that the Title I students' compensatory language arts instruction replaced a portion of the regular language arts instruction delivered to other students in the district" (p. 36). Kimbrough and Hill (1981), Lignon and Doss (1982), and Allington (in press) reached a similar conclusion. Wang et al. (1978) reported that CE students in general and Title I students in particular received more hours of instruction than their non-CE peers at the upper elementary grade levels. This advantage was not found in the early elementary grades. Coulson et al. (1977) also found that CE students

received greater amounts of instruction in reading and mathematics than less needy students. Carter (1984) offered the following comments on the amount of instruction received: "Title I students received considerably more hours of instruction in reading and math than did regular students. But while Title I students were receiving this additional reading and math instruction, regular students were also receiving instruction in various subjects, including other language arts activities, other math, social studies, field trips, and physical education. Thus it is not clear that Title I students enjoyed a net gain in total instruction" (p. 5).

Somewhat more recent data on the nature of instructional services is available from the District Practices Study conducted by Advanced Technology, Inc. (1983). Like the other national studies, this study also found that reading and mathematics were the first and second most important components, respectively, of Title I programs. However, somewhat higher estimates of the numbers of districts offering such instruction were reported (i.e., 97 percent of the Title I districts for reading and about 67 percent for mathematics). One of the goals of the District Practices Study was to assess the expected effects of Chapter 1 on local school districts' implementation of compensatory education programs. Beyond this, however, national level data do not yet exist on the actual impact of Chapter 1. Carter (1984) has commented on this state of affairs: "Beginning with the 1982-83 school year, Title I has been succeeded by Chapter 1 of the Educational Consolidation and Improvement Act of 1981. Although theoretically Chapter 1 gives local authorities somewhat greater programmatic flexibility, it is believed that the results reported here for Title I will apply equally well to the new Chapter 1 compensatory education program" (p. 4). How good a prophet Carter is remains to be seen.

Class Size, Grouping, and Individualization

All of the national studies concur that compensatory education students receive their instruction in somewhat smaller classes than regular students. NIE (1977), for example, reported that the average class size for compensatory instruction was 9 students in reading and 12 students in both language arts and mathematics. On the other hand, the average size of the homeroom from which these students were drawn was 27. The District Practices Study found that there were an average of 9.8 children in a Title I class and that there was an average pupil-to-instructor ratio of 4.5 to 1. NIE (1977) also reported that the average size for instructional groups was four to five students. Coulson et al. (1977), Wang et al. (1978), Archambault and St. Pierre (1980), and Carter (1984) likewise reported smaller group sizes for students receiving compensatory instruction. Related to class size and grouping,

at least in the sense that smaller classes and groups afford greater opportunities for teacher flexibility, is the issue of individualization. Unfortunately, but not unusually for educational practices, a common definition of individualization does not exist. As a result, it is extremely difficult to compare results across studies. Nonetheless, it does appear from the literature that teachers of Title I students use different methods and practices than teachers of regular students (Carter, 1984). Moreover, according to NIE (1977), Cooley and Leinhardt (1980), and Frechtling and Hammond (1978) it also appears that at least some of these techniques (i.e., alternative learning paths and sequencing for individual children, individual or small-group pacing, assignment of specific learning objectives or activities to individual children, diagnostic and prescriptive teaching, etc.) may be viewed as components of individualized instructional programs. However, as noted by NIE (1977), some of these techniques are used more than others, and, as reported by Frechtling and Hammond (1978), it appears that lots of different instructional approaches can work.

Type of Instructor

Archambault and St. Pierre (1980) reported that the large majority (i.e., about 73 percent) of regular language arts instruction was delivered by classroom teachers. For compensatory instruction, on the other hand, the large majority of the instruction was delivered by instructional specialists (about 66 percent) or paraprofessionals (about 24 percent). Wang et al. (1978) reported that CE students received far more individual or small-group instruction from special teachers and aides than did their non-Title I peers. Generally, these instructional specialists have a higher level of educational attainment than the regular classroom teachers (Vanecko, Ames, and Archambault, 1980; Coulson et al. (1977). Carter (1984) also found that Title I specialists had somewhat more coursework and inservice training than regular teachers but that they had somewhat less teaching experience. Cooley (1981) summarized the findings on the type of instructors employed by Title I as follows:

> The Title I supported teachers provide additional instructional services to eligible students. Two aspects of the (Title I) regulations complicate their deployment in the schools. Teachers are not to serve students who are ineligible for Title I services, and they cannot be the only teachers to serve eligible students....Thus, schools have little alternative but to pull children out of their regular classrooms for part of the week and provide this "extra" instruction in special Title I classes with other eligible children. (p. 299)

With this in mind we turn now to a review of the literature concerning the setting or location for instruction.

Setting for Instruction

Instruction can be delivered within the regular classroom, outside the regular classroom, or partially inside and partially outside the regular classroom. Instruction delivered outside the regular classroom has been given the name pullout instruction, since recipients are removed or pulled out of their regular classroom and sent to another location. Usually, this location is within the same school building, and the instruction delivered there, as noted above, usually is provided by an instructional specialist working with smaller groups of children than were in the classroom from which the Title I student was removed.

What do we know about the amount of instruction delivered in various settings? Carter (1984) reported that compensatory instruction was typically provided in a pullout setting, as did Vanecko, Ames, and Archambault (1980), Archambault and St. Pierre (1980), Kennedy (1978), Stonehill and Anderson (1982), NIE (1977), and others. In one national study (Advanced Technology, 1983) over 90 percent of the districts in the sample employed a pullout design exclusively or in combination with an in-class model; only 30 percent of the districts used an in-class design.

NIE (1977) reported that almost 75 percent of the students in Title I reading programs received their instruction in a pullout setting. About 41 percent of the compensatory language arts instruction was also delivered in a pullout setting, as was about 45 percent of the mathematics instruction. NIE also reported that about 24 percent of compensatory education students receive their regular instruction in groups comprised of only CE students. Glass and Smith (1977) claim that when the NIE pullout figures are corrected to eliminate pupils in 100 percent Title I eligible classrooms who do not need to be pulled out, the pullout rates in all other classrooms rise to 84 percent for reading, 54 percent for mathematics, and 50 percent for language arts. Glass and Smith go on to argue that "when one considers further that pupils might be 'pulled out' for one of these subjects and not the other, it is plausible to say that in classes not 100 percent 'Title I eligible' the practice of 'pullout' for compensatory teaching is nearly universal" (p. 2).

Coulson et al. (1977) reported that the amount of the total instructional time students spend in pullout programs represents a small percentage of the total time devoted to instruction (i.e., less than nine percent for both reading and math). However, they also concluded that the actual amount of

time had increased between 1973-74 and 1974-75, the two years for which data were analyzed.

More recently, Advanced Technology, Inc. (1983) reported that pullout programs were being used less frequently and that the use of in-class designs was on the rise. Unfortunately, it is not possible to provide more current national data than this. Thus, it is also not possible to determine at this time, and on a national level, whether ECIA and the resultant streamlined set of Chapter 1 regulations may be stimulating increased use of the in-class model. However, despite some evidence to the contrary (Allington, in press; Plato and Rasp, 1984; Hayes, 1983; Vasquez and Nuttall, 1983), personal conversations with a number of state and local administrators indicate that in some regions of the country there may in fact be an increased use of in-class or combined pullout and in-class approaches. The extent to which this has occurred remains to be seen. If this has occurred, however, one would suspect that it was due to either changes in the law and regulations (i.e., changes from Title I to Chapter 1) or to changes in the perceptions of those directing compensatory education programs at the various levels of the state and national educational establishments.

Law and Regulations Surrounding Pullout

As noted above, the pullout model has enjoyed wide popularity as a vehicle for delivering Title I instruction. Given this, one would assume, or perhaps it might be more accurate to say hope, that the pullout approach is favored on pedagogical grounds. Vanecko, Ames, and Archambault (1980), however, argue "the pullout model has not necessarily been selected for pedagogical reasons, but rather to comply with state and local perceptions of Federal requirements" (p. 108).

Two provisions in the Title I legal framework appear to have provided the springboard for pullout instruction. The first is the supplement-not-supplant provision, which mandated that Title I funds be used to supplement funds available from non-Federal sources for regular instructions and for certain local or state compensatory education programs. These same Title I funds could also not be used to supplant or replace such funds from non-Federal sources. The second provision, the excess costs requirement, provided that Title I funds could be used to fund only the excess costs of Title I programs and projects. Gaffney and Schember (1982) shed a great deal of light on how these two provisions effected Title I instruction:

> In earlier years there was some uncertainty about what the supplement-not-supplant/excess costs provisions required of schools to ensure that Title I participants received extra services. When auditors from the U.S. Department of Health, Education and Welfare cited school districts for in-class programs that also served non-Title I students (a "general aid" violation), some states and districts perceived the problem to be "supplanting" and turned more to pullout models as the solution. Consequently, though Title I never so stated, some program administrators believed pullout designs were legally required, or necessary to avoid audit problems; and some states refused to approve any in-class programs. Thus, "uncertainty or misconceptions about the meaning of certain requirements and the fear of possible audit violations" led some states to promulgate "overly restrictive policies concerning the types of programs Title I may fund." (pp. 6-7)

Gaffney and Schember also note that more frequent use of pullout instruction actually may have increased rather than decreased the number of supplement-not-supplant violations, particularly where students were pulled out for long periods and Title I instruction substituted for, instead of supplemented, state and locally funded instruction the students otherwise would have received.

In 1978 Congress tried to correct this situation by stating that Title I did not require any particular instructional strategy and by directing the Office of Education to develop regulations which told program administrators how to design in-class as well as pullout programs. In the 1981 Title I regulations even more clarification was offered, and six types of models were described: (1) in-class, (2) limited pullout, (3) extended pullout, (4) replacement, (5) add-on, and (6) other. It was also indicated later in 1981 that the regulations setting forth the six program design models were guidelines which could be followed rather than regulations which had to be followed.

In the summer of 1981 Congress went even further by repealing the excess cost provision and by adding a new provision stating that pullout projects could not be required to prove compliance with the supplement-not-supplant requirements of the new Educational Consolidation and Improvement Act (ECIA). Gaffney and Schember (1982) claimed that despite this the Department of Education also argued that they had not changed their interpretation of how the supplement-not-supplant provision applies to the design of instructional programs.

The following conclusions appear to flow from the above discussion: (1) prior to the passage of ECIA in 1981 pullout programs may have been instituted in large part as a means of complying with what were perceived to be Federal regulations, for the purpose of avoiding sanctions resulting from violations of these regulations; (2) that at least from the vantage point of 1981 Congress claimed that they never required pullout for districts to be in compliance with the provisions of the regulations; and, (3) that in the last days of the Title I regulations, but even more clearly under Chapter 1 regulations, the Department of Education has specifically suggested that instructional models other than pullout should be considered. However, all of these pronouncements appear to have been made without conclusive evidence about the pedagogical effectiveness of these various alternatives.

Impact of Pullout on Achievement

This section and the one which follows are concerned with the impact of instructional setting on certain outcome variables. This section reviews the evidence concerning student achievement. The next section discusses the impact of setting on student and teacher attitudes and morale. The following picture emerges from this review: (1) in some cases compensatory education in a pullout setting leads to higher student achievement than in-class instruction, in other instances in-class instruction has a more positive effect, and in still others, and these appear to be the majority of cases, the setting for instruction has no significant effect on student achievement; (2) the findings on the cost effectiveness of the approaches are also mixed; (3) the type of instruction delivered within a particular setting is more important than the setting itself; (4) perceptions about the appropriateness of either the pullout or in-class setting vary from site to site and are most likely influenced by the types of programs that have been implemented at the sites, teachers' and administrators' perceptions of what is best for compensatory students, and the conditions or circumstances peculiar to the site; and (5) the in-class setting is strongly preferred by some authors on moral and ethical grounds.

One of the first large scale (n = 8319) investigations of the effect of pullout was the third year evaluation of the Emergency School Aid Act (Coulson et al., 1977). In this study, the impact of pullout and 18 other variables was investigated across two types of compensatory education programs (Pilot and Basic Programs), two content areas (reading and mathematics) and three grade levels (3, 4, and 5). Pullout was defined here as the proportion of reading or mathematics instruction received outside the regular classroom, and, along

with 18 other variables, it served as a predictor variable in 12 regression equations (2 programs x 2 content areas x 3 grade levels yields 12 equations). For eight of these analyses no significant differences were found for the pullout variable. In the other four instances three of which were concerned with reading, pullout was found to have a significant negative effect on achievement. Leinhardt and Pallay (1982) interpret these findings to mean that a change from receiving one-half instruction in reading to receiving one-half instruction in pullout would be associated with a small reduction in the dependent measure. These researchers argue that no matter what the dependent measures was, the effect was very small.

Perhaps evens more important than the small effect size is the strong possibility that pullout was associated with less gain because (1) less able students tended to get pullout instruction and (2) the pretest did not control adequately for such differences. Further, and as suggested by Coulson et al. (1977), schools were more likely to use pullout instruction when they had students with more severe problems.

The Instructional Dimensions Study (IDS) conducted for NIE by the Learning Research and Development Center (LRDC) at the University of Pittsburgh also was concerned with the effect of pullout. This research focused on reading and mathematics instruction in first and third grade and used classrooms as the basic unit of analysis. Here the variable "setting" was scaled as a composite of the time students were in supplemental instruction outside the regular classroom and the number of children in a classroom that were pulled out for instruction. NIE (1977) reported that the results uncovered in this research differed by content area and grade level. First-grade students receiving instruction in the regular classroom (i.e., the in-class setting) made significantly larger gains in reading and mathematics than those in pullout settings. However, at the third-grade level, setting had no significant effect on reading achievement and pullout was associated with larger achievement gains in mathematics. NIE interpreted these results to mean that neither setting is consistently associated with greater instructional effectiveness.

Arguing that the test was too difficult Glass and Smith (1977) criticized the NIE study for using the achievement pretest as a covariate. Consequently, even researchers at LRDC argued that the covariate did "very little to adjust for initial differences among first-grade students, and the use of gain as a dependent variable (worked) no better (probably worse) than posttest" (Leinhardt and Palley, 1982, p. 568).

Subsequent to these criticisms, Frechtling and Hammond (1978) reported on a reanalysis of the NIE findings. These researchers, who were part of the team monitoring the IDS study

for NIE, noted that rechecking and cleaning the data changed the previously described picture slightly. As before, in-class instruction was found to have a positive effect on achievement at grade 1 for both reading and mathematics. At grade 3, however, in-class instruction was found to be more effective for reading (there was no difference previously) while no significant difference was found for instructional setting when mathematics was considered (pullout was more effective previously) [see Table III-2]. Frechtling and Hammond (1978) argued that despite these changes in the previously reported findings they would "be uncomfortable concluding from the IDS data that districts should use only the in-class approach" (p. 9). They offered several reasons for their position: (1) the IDS findings were based on data from districts that were "special" and not nationally representative; (2) they had a gut feeling that mainstreaming (i.e., in-class instruction) may pose problems for many teachers and simply not be possible in some instances; and (3) they were unwilling to generalize from a single study. On this last point they argued that "the IDS, despite all its virtues, is only one study, and convergent evidence from other work is not yet strong enough" (p. 9).

Cooley and Leinhardt (1980) and Leinhardt and Palley (1982) also report on the IDS study and, to make matters somewhat more confusing, their findings are different from those reported by NIE. Cooley and Leinhardt (1980) reported that setting was related to student achievement gain only in third-grade reading and that more time in pullout was associated with less gain. As can be seen in Table III-2, this is quite different from NIE's interpretation of the findings.

Leinhardt and Palley (1982) discuss a reanalysis of the IDS data in which they at least partially addressed the criticism of the pretest measure leveled by Glass and Smith (1977). In these analyses they included only children who had received pullout instruction and they treated setting as a student level variable rather than the classroom level variable employed in their previous analysis. They also changed the nature of the setting variable, redefining it as the number of minutes a child was in pullout. With these changes, they ran four equations (reading and math at grades 1 and 3) which regressed posttest on pretest, the number of minutes in pullout, and instructional overlap (i.e., the degree to which material tested was actually covered in instruction). Leinhardt and Palley (1982) based the following conclusion on these reanalyses:

Reanalyzing the data with only those children that received pullout changed the picture dramatically. In the analysis with the non-pullout students, there was a negative relationship between the time spent in pullout and posttest in all cells. When the non-pullout students were excluded from the analysis, the results completely changed. There was a positive significant relationship between pullout and posttest in all cases except third grade reading. (p. 568)

Table III-2

Various Perspectives on the Pullout Findings of the Instructional Dimension's Study[1]

(1) NIE's Perspective

	A		B	
	Reading	Math	Reading	Math
Grade 1	I+	I+	I+	I+
2	ND	P+		
3			I+	ND
	Based on NIE (1977)		Based on Frechtling & Hammond (1978)	

(2) LRDC's Perspective

	C		D	
	Reading	Math	Reading	Math
Grade 1	ND	ND	P+	P+
3	I+	ND	ND	P+
	Based on Cooley & Leinhart (1980)		Based on Leinhart & Palley (1982)	

[1]The Instructional Dimensions Study was commissioned and monitored by NIE and conducted by the Learning Research and Development Center at the University of Pittsburgh.

Key: I+ = in-class students outperform pullout students
P+ = pullout students outperform in-class students
ND = no difference

By way of explaining differences across the two analyses, Leinhardt and Palley (1982) offer the following:

> The most plausible interpretation of these results is that the non-pullout students had more academic knowledge than the pullout students, that is, the poorer students were chosen for pullout. Hence, pullout was associated with less achievement because it had less able students and not because it was an inferior practice. Pretest did not adequately adjust for all the initial differences. In this case, the underadjustment would be particularly faulty for the first grade since (as Glass & Smith, 1977, pointed out) the pretest was not a good measure of initial abilities. Examining the results with the non-pullout students removed, we see the following: Pullout is still associated with less gain in third grade reading but not in the other three cases. Overall, the more time a student spent in the segregated pullout class, the greater the gain. It seems likely that effective practices were being implemented in these settings. It cannot be determined whether students who were pulled out suffered some initial losses due to having been removed from the regular class. We can say that once pulled out, they increasingly gained from more pullout instruction. (p. 568)

Prior to these reanalyses, Glass and Smith (1977) looked at the results of both the IDS study, as reported by NIE, and the ESAA evaluation and found that the ESAA study provided a better data base and more believable evidence for assessing the effects of pullout. Their review of the ESAA findings led them to conclude that there was a consistent negative relationship between the percentage of time pupils spend in the pullout setting and their mathematics and reading achievement. They also concluded that, "pupils pulled out of their regular classrooms would have to receive remarkably effective compensatory programs to offset the potential risks incurred. In our opinion, the 'pulled out' pupil is placed in moderate jeopardy of being dysfunctionally labeled, of missing opportunities for peer tutoring and role modeling, and of being segregated from pupils of different ethnic groups" (p. 41). Finally, they concluded that the "pulled out" procedure per se had no clear academic or social benefits and may, in fact, be detrimental to pupils' progress and adjustment to school.

From their paper, it appears that Glass and Smith were willing to base their conclusions about pullout on the results of a single study. Obviously, other studies influenced their decision, as suggested by their review of the impact of variables such as ability grouping, labeling, peer tutoring,

racial desegregation, and mainstreaming the handicapped. But, it appears that the ESAA findings were the sine qua non of their argument. With these findings in hand they could argue that pullout is not only ineffective in improving achievement but that it also produces harmful labeling of students, it serves as a means for resegregating students, and so forth. But is pullout truly ineffective in improving achievement? The reanalyses of the IDS data argues that it is not, and, based on these new findings, it appears that Glass and Smith (1977) may have been too negatively disposed to the impact which pullout has, at least on achievement. But, at the same time, the reanalyzed IDS data do not suggest that pullout is the best method for improving the achievement of compensatory education students. Rather, they seem to suggest that pullout is one method that should be considered. Cooley (1981) captures the essence of these mixed reactions: "No doubt there are schools in which the pullout practice is being done well, but there are certainly schools in which this may be doing more harm than good" (p. 300).

More recently, a few studies have looked at the impact of pullout on achievement, but, with one exception, these studies are much narrower in scope and in significance than those reported above. Consequently, they do little more than add fuel to the setting debate fire. Nonetheless, they are worthy of consideration, and we turn now to a brief discussion of them.

The Sustaining Effects Study did not directly address the question of the impact of pullout on achievement. However, Carter (1984) did conclude that pullout was the most typical mode of instruction in Title I programs and that Title I did make a difference in achievement, if only for moderately academically disadvantaged students. It could be argued that Carter thus indirectly concluded that pullout has some effect on achievement. However, as is increasingly the case in the literature, Carter was more interested in describing the effect that particular classroom practices had on achievement rather than discussing the effect of setting. Those variables which his research found to be important were opportunity to learn, lower student-staff ratio, allocation of teachers' time, classroom management practices, source of student off-task behavior, supervision of students, and coordination of instruction. He also found years of teaching experience and the instructional leadership of the principal to be important variables. We will return to a discussion of these issues in a later section.

Yap (1983) also addressed the question of pullout in his secondary analysis of data acquired over a three year period (1978 to 1981) throughout the state of Hawaii. His research yielded few examples of statistical significance, but he did

find a trend indicating the superiority of pullout. He also found some significant interactions between grade level and setting, but such effects were generally not substantial. Thus, he concluded that in terms of achievement gain, students who received Chapter I instruction in the pullout setting are likely to perform as well as, if not better, than their counterparts in other settings. He also concluded that despite some drawbacks the pullout setting was a viable option for providing services to Chapter 1 youngsters.

In a 1985 article, Yap also argued for the cost effectiveness of the pullout approach. Using the data described above, he found that pullout produced a unit of normal curve equivalent (NCE) gain for every $81 spent. Corresponding figures for in-class and combination programs were $84 and $86, respectively. These findings disagree with those of Dieneman, Flynn, and Al-Salam (1974) who reported that the per-pupil cost of remedial instruction in the pullout setting is roughly twice the cost of such instruction in the regular classroom. They also disagree with the more recent findings of Fitzgerald and Hunt (1985). In this study of about one-third of the school districts in Minnesota, both pullout and in-class settings were found to be equally effective in producing student achievement gains. However, the pullout setting was found to be more costly and to show a trend toward lower cost-effectiveness than in-class instruction. Unlike Dieneman et al., Fitzgerald and Hunt argue that these increased costs for pullout might be due to the use of licensed teachers in pullout settings and teacher aides for supplemental in-class instruction.

Nearine and Pecheone's (1984) study of the Intensive Reading Instruction Team (IRIT) program implemented in Hartford, Connecticut also reported positive effects for pullout, as did Knight's (1979a, 1979b, 1979c) studies of selected schools in New York City. In the Knight studies, however, weaknesses in experimental design render the results suspect. Finally, Madhere (1981) reported that pullout was more effective than in-class instruction in improving student achievement. In discussing the results of this study Madhere offers two explanations for the effectiveness of pullout: (1) it may reflect a more systematic effort in designing and following the remedial instruction sequence; and (2) it may result from teachers' familiarity with the approach since it has been the predominant mode of compensatory instruction over the years. Madhere also argues that pullout appears to be most effective in an environment where the Title I pupils constitute a majority of the students in the school. He contends that in such a context, the impact of labeling a student in need of assistance, a negative consequence according to the critics of pullout, may also be meaningless.

Doss and Holley (1982), on the other hand, reported that pullout programs were not effective. They argued that compensatory programs conducted during the regular day inevitably supplanted regular instruction. They also argued that one of the reasons for the ineffectiveness of pullout programs was the regular classroom teacher's decreased sense of responsibility for the special program student. Finally, and based on Glass and Smith's (1979) meta-analysis of class size and achievement, they argued that reducing class size to 15 and delivering instruction within the regular classroom would not only redress some of the problems occurring within pullout programs but also improve student performance. Since this approach was permissible under the "school-wide projects" provision of Title I in force at that time, such a program was implemented on a pilot basis in 1980-81 in two Austin, Texas elementary schools. Analyses were conducted on reading and mathematics achievement for students in grades 2 through 6 in those schools and in certain Title I schools using pullout programs. From these analyses, Doss and Holley concluded that in most school-wide projects students outscored Title I regular students of the same pretest level and that in most cases the impact of the school-wide projects was uniform across all levels of the pretest. On average, the advantage of the school-wide projects across grades were 2.1 months in reading, 2.5 months in language arts, and 2.2 months in mathematics. However, these gains were purchased at such great expense ("lowering the PTR [pupil-teacher ratio] from 25-1 to 15-to-1 would increase personnel costs by 67 percent in the schools and grades where applied" (Doss and Holley, 1982, p. 10)) that the project had to be discontinued after about two years of operation. Levine and Stark (1981) report that the school-wide projects implemented in the Los Angeles Unified School District suffered a similar fate partly because they were very expensive and partly because there were questions about how well they worked.

What, then, can we say about the effect of pullout on achievement? Based on the research that has been conducted to date, we cannot conclude with confidence either that pullout is more effective than in-class instruction or that the opposite is true. We also cannot conclude that one or the other of these approaches is more cost effective. We can conclude, however, that the achievement findings provide little support for the overwhelming, and in some locations almost exclusive, use of the pullout model. Rather, the findings suggest that both pullout and in-class instruction can be effective, given appropriate circumstances, and, as reported by Carter (1984), Leinhardt and Palley (1982), Tobias (1982), and others, it is likely that these circumstances, particularly the type and quality of the instruction delivered within an instructional setting, are more important than the setting itself. Despite this general sense, however, it must be reported that pullout programs have been found suspect for reasons other than their

impact on achievement. Thus, before considering the types of variables which should be emphasized in any instructional setting, we turn to a discussion of additional issues and concerns about the setting for instruction.

Other Effects of Instructional Setting

In addition to achievement findings, the literature also includes an increasing amount of other information on the effectiveness of in-class versus pullout programs. Included among the long list of issues which have been addressed are the following: (1) the stigma associated with receiving Chapter 1 instruction, particularly in a pullout setting; (2) the levels of communication, cooperation and coordination possible in the two settings; (3) the levels of teacher autonomy and control afforded by the settings; (4) the amount and type of content lost when compensatory instruction is received, particularly in pullout programs; (5) grouping patterns, individualization and segregation in in-class and pullout settings; (6) the relationship among peers and the opportunity for peer tutoring; and (7) the types of instructors and their roles in different settings. Some of the data bearing on these issues have been presented earlier in this paper, particularly in the section describing the nature of compensatory instruction. Additional data will be presented below. In either case, much of what we know about these issues is derived from relatively small scale observational studies, studies of relatively modest scope reporting on the results of interviews with program students, teachers and administrators, and somewhat narrow surveys of the perception of these and other groups. Moreover, and as was the case with the review of the impact of setting on achievement, the data which are available are generally equivocal.

Stigma

Leinhardt and Pallay (1982) reported that despite contrary research findings special educators strongly believe that special placement makes the target child feel rejected rather than rescued. Likewise, many educators believe that compensatory education students are likely to feel different if they are labeled as Chapter 1 eligible and are pulled out of their regular classrooms for special instruction (e.g., Leinhardt and Pallay, 1982; Shuy, 1978; Glass and Smith, 1977. Some argue, on the other hand, that stigmatization occurs in mainstream programs as well (Noddings, 1978). On this score, at least one author has suggested that stigmatization may be greater in the mainstream setting since in this environment compensatory education students are both singled out and remediated in front of their classmates (Hayes, 1983). From a slightly different perspective, it has also been argued that pullout is an

effective instructional strategy in an environment where Chapter 1 students constitute a majority, and that, in such settings, labeling may be meaningless (Madhere, 1981).

Even though the research evidence is inconclusive, it appears reasonable to argue that stigmatization occurs in both in-class and pullout settings: in the in-class setting because students receive extra instruction in front of their peers and in the pullout setting because students are easily identifiable. It also appears that it is not the setting itself that aggravates the feeling of being different, but the sensitivity or insensitivity of teachers operating within the setting (Noddings, 1978). Kennedy's (1978) advice on this issue seems particularly compelling:

> Compensatory education students are less likely to be subjected to labeling and its negative effects in environments where teachers actively encourage children's respect for and appreciation of a variety of human differences; in environments where similarities between learning tasks and materials are emphasized; and in environments where Title I and non-Title I children frequently move, in an organized way, to other parts of the building or classroom to receive special instruction. (p. 35)

Communication, Cooperation, and Coordination

One of the most frequently cited advantages of the in-class setting is the increased communication, cooperation, and coordination among regular classroom and compensatory education instructors that it affords. Advocates of in-class instruction argue that, because specialist teachers or aides hired with compensatory education funds provide their instruction in the same classroom as the regular teacher, there will be increased interaction and cooperation in planning for instruction (Bean and Eichelberger, 1985; Kennedy, 1978; Hayes, 1983; Neumann, 1985), better integration of remedial and regular instructional strategies (Kaestle and Smith, 1982; Allington, in press; Bean and Eichelberger, 1985), better opportunities for individualization and small-group instruction, (Bean and Eichelberger, 1985), and a better flow of information on student progress (Harnischfeger, 1980). There will also be fewer disruptions caused by students moving in and out of the regular classroom (Hayes, 1983), and thus more continuity in instruction, as well as an increased opportunity for regular classroom teachers to observe other, and perhaps more effective, approaches for working with compensatory education students (Kennedy, 1978).

Allington (in press) has offered some particularly powerful comments on one of the consequences of pullout, namely the fragmentation of instruction. He suggests that pullout

remedial reading instruction is typically independent from the reading instruction offered in the regular classroom and that it generally employs different materials and teaching methods. He argues further that neither the classroom teacher nor the compensatory education specialist is likely to know what type of instruction the other is offering. Consequently, he claims that few remedial students actually receive instruction that supplements their core curriculum; rather they are taught by classroom and remedial teachers who express different beliefs about student needs, offer different objectives as targets for instruction, and use reading material that represent distinctly different models of the reading process. As a result, he argues, students who are in need of remediation are offered instruction that seems likely to increase their confusion rather than reduce it. Allington, however, also acknowledges that pullout programs can offer a "congruent instructional setting", and, therefore, that the incidence of separate curricula must be related to factors other than the instructional setting itself.

Despite this strong indictment of pullout programs, it appears that in-class programs also present problems, and further, that some are the same as those prevalent in pullout settings. Bean and Eichelberger (1985), for example, noted differences in classroom teachers' and specialists' teaching styles and instructional strategies when a large city school district changed from a pullout program to one in which specialists worked in the regular classroom. Moreover, although teachers in this new program reported increased interaction and cooperation, they also reported problems with scheduling and inadequate joint planning time; reading specialists, on the other hand, reported that there was a lack of teacher interaction, that they were not sure what their role was in the classroom, that they had insufficient materials, and that there was inadequate management. Bean and Eichelberger (1985) concluded that these problems were due to two teachers sharing the same room and that, despite the in-class arrangement, teaming was difficult. Vasquez and Nuttall (1983) reached similar conclusions. These researchers also argued that it is the classroom teacher, not the specialist, who is forced to schedule activities that will accommodate another class in the same room and that the coordination between the regular and compensatory program is still accomplished outside of the regular classroom, before school, during recess, during lunch, or after school. They argued further that even though the materials used in the regular and remedial programs are more likely to be similar in in-class programs, pullout programs use a greater variety of instructional materials. Specialist teachers working in the regular classrooms apparently find it difficult to transport books and other paraphernalia from classroom to classroom (Bean and Eichelberger agree), find it harder to use audio-visual

materials because they would be distracting to the regular classroom teacher, and, for that same reason, avoid materials that require recitations or other "out-loud" work. Despite his enthusiasm for the in-class approach, Neumann (1985) concluded that where this type of setting is used specialists must be highly organized, must be flexible enough to work in several environments, and must have the diplomacy and personality needed to work jointly with colleagues.

Taken together, these results suggest that even though in-class programs offer the opportunity for increased communication, cooperation, and instructional continuity, they do not ensure that they will occur. Perhaps, as suggested by Kennedy (1978), the key to good coordination between compensatory and regular instruction is not the setting for instruction but rather the quality of the joint planning that occurs, the amount of decision-making power given to teachers and specialists by their respective administrators, and the flexibility in scheduling. Whether these characteristics occur more frequently in in-class settings remains to be seen.

Teacher Autonomy and Control

Critics of the pullout model have argued that when students receive remedial instruction outside the regular classroom neither the regular teacher nor the compensatory education specialist is willing to accept full responsibility for the students' progress (Allington, in press; Doss and Holley, 1982). If they so desire, classroom teachers can claim that less than acceptable progress is attributable to shortcomings of either the student or the compensatory instruction; compensatory education specialists, on the other hand, can attribute such a result to either the student or inadequate regular classroom instruction. To avoid such academic finger-pointing, some have argued that the adoption of the in-class model would allow the teachers sharing the same space to share this responsibility or the administrators coordinating the program to decide on whose shoulders the responsibility should lie. Despite the wisdom of this argument, however, it appears that the adoption of an in-class arrangement will again not ensure the expected outcome. Bean and Eichelberger (1985), for example, reported that both teachers and specialists had problems with two instructors in one room and that the problem of leadership or control was a real issue. Vasquez and Nuttall (1983) reached a similar conclusion, as did Shuy (1978), who found that some of the teachers in the Instructional Dimensions Study favored pullout because it gave them greater autonomy. On the other hand, Shuy also reported that some teachers favored the in-class approach because it gave them more control. Unfortunately, the literature does not allow one to resolve this apparent conflict.

Content Lost

It was argued earlier in this paper that students receiving compensatory instruction in a particular content area (e.g., reading) do so at the expense of regular instruction in that same content. Harnischfeger (1980) concluded that pullout pupils "often receive less reading time than the rest of the class because the pulling out--going some place and coming back--also entails loss of instructional time for students who need more" (p. 4). Regardless of whether this is true, and there is some evidence to suggest that the total time allocated to basic skills instruction is greater for compensatory education students than for their non-compensatory education peers (Archambault and St. Pierre, 1980), the implication is that some approach other than or in addition to pullout would be more effective. Harnischfeger's solution would be to lengthen the school day for compensatory education students. Others argue that providing in-class instruction would solve the problem because then the time lost by traveling from place to place would be retained. Allington (in press), for example, suggests that as much as 15 minutes per day, or 40 hours per academic year, might be saved in this manner. However, neither Allington nor anyone else that this reviewer has been able to uncover provides direct evidence on what would actually be done with the newly found time were compensatory instruction to be provided in-class. Would the interruptions prevalent in in-class programs (Hayes, 1983) prove to be less troublesome than the disruption associated with pullout programs? Would the presence of more than one teacher in a single classroom result in greater confusion than occurs in pullout programs, particularly when such programs are adopted on a wholesale basis? Additional research is needed before we can determine with any confidence whether in-class compensatory education programs result in more or less time allocated to instruction. Additional research is also needed to determine whether such differences in allocated time are accompanied by differences in the amount of time which students in various settings actually engage or actively participate in instruction.

Grouping

Compensatory instruction is delivered in smaller classes and groups than regular classroom instruction. It is also more likely than regular instruction to incorporate components of individualized instructional programs. Pullout instruction, which comprises the large portion of compensatory instruction, is delivered in groups that are more homogeneous in ability than those in the classrooms from which compensatory students are removed. Do the reductions in class and group size and the increase in individualization of instruction have a positive affect on students? Is homogeneous ability grouping preferred

to heterogeneous ability grouping? We turn now to a discussion of these issues.

Glass and Smith (1979) reported that achievement is higher in smaller classes, particularly in those with 15 or fewer students. Since the average class size for compensatory instruction in reading, language arts, and mathematics is below 14 while the average size of the regular classroom is 27, it would appear that on achievement grounds alone smaller class sizes would be preferred. Moreover, if students in these smaller classes, which are really pullout classes, are also receiving more individualized instruction, then the case for pullout instruction would appear to be even stronger. Before we leap to this conclusion, however, we should review what other researchers have to say on this issue.

Cooley and Leinhardt (1980), for example, have reported that the Instructional Dimensions Study did not provide any clear evidence for the superiority of individualized instruction over other methods of compensatory education. Their review of the literature also suggested that this result was consistent with other attempts to establish the effectiveness of individualized instruction. In addition, these researchers also failed to find a consistent relationship between class size and achievement. They concluded that "large classes may make the environment less pleasing and work conditions less tolerable, but they do not systematically detract from learning (at least, within the bounds of the class size in these samples)" (p. 21). Harnischfeger (1980), taking a somewhat different view, reported that, even when class sizes are reduced drastically, many teachers do not significantly change their teaching strategies. She suggests that the only consequence of smaller class sizes is smaller subgroups but not fewer groups, and, on the average, no increased teacher-pupil interaction. Harnischfeger goes on to argue that instead of a teacher working with small groups, one at a time, while the rest of the class is on their own, he or she should consider whole class instruction. If they do, Harnischfeger argues, their students will benefit by receiving more direct instruction.

Taken together, these results suggest no clear-cut advantage for either smaller class sizes and individualized instruction or for pullout programs. Unfortunately, the recent literature on ability grouping is also confusing and contradictory. Glass and Smith (1977) concluded from their review of the literature that ability grouping is not an important variable in itself and that it is worth considering only as it relates to or potentiates other changes in instructional activities. They go on to conclude, however, that "the accumulated research literature of several decades shows such an unstable pattern of what takes place between teachers and

pupils in homogeneous as opposed to heterogeneous classrooms that no generalizations are possible (or useful) about the effects of ability grouping" (pp. 34-35).

Based on their review of the ability grouping literature, Leinhardt and Pallay (1982) concluded that while there is a trend toward negative effects of isolated settings for low-ability children, it is neither strong nor highly consistent. Some of the studies they reviewed showed favorable results of tracking for low-ability students; many showed mixed results.

Aside from these issues, the removal of the children from regular classrooms for compensatory instruction creates the possibility of resegregation. On this score, Glass and Smith (1977) have argued that pullout programs do not alter the racial mixture of schools but they may and probably do change the racial composition of the classes within them. Eyler (1982) is less equivocal. Citing the work of Hinkley, Beal, and Breglio (1978) and Brookover, Brady, and Warfield (1981), she argues that minority students receive larger amounts of compensatory instruction than non-minorities and that they are typically pulled out of less segregated classrooms and sent to more segregated special rooms to receive their instruction. Citing the work of Kimbrough and Hill (1981), Eyler argues that the potential for resegregation through compensatory services is exacerbated in schools that operate more than one categorical program and have substantial numbers of students who are eligible for more than one type of service. She also argues that the negative effects of resegregation are not offset by pullout's effects on achievement. To avoid problems created by pullout, Eyler recommends that compensatory services be delivered in-class by specialists who act as consultants rather than simply as subject matter specialists. In this redefined role they would serve as resources to the regular classroom teacher rather than instructors of specific groups of students. They would assist teachers in assessing specific learning problems and preparing individual learning plans, train classroom aides and parent volunteers, and help the principal plan the school-wide instruction program.

On the question of race relations, Slavin (1979, 1980) and Slavin and Madden (1979) reported that both working together on school projects with a student of another race and competing together on interracial sports teams had strong positive effects on racial attitudes and behaviors. However, teacher workshops, minority history, multiethnic texts, biosocial student advisory committees, and similar school programs made no difference in racial attitudes or interracial friendships. Given these results, it would appear that if pullout programs do lead to resegregation, as Eyler (1982) and others have argued that they do, the resultant reduction in contact between minority and non-minority students will reduce the possibility

of improved relations among the races. To the extent that this occurs, it must be viewed as a serious negative consequence of the use of the pullout model.

Peer Tutoring and Cooperative Learning

Levin, Glass, and Meister (1984) report that cross-age tutoring has a long, informal history in American education. Citing the work of Ehly and Larsen (1980), they report also that peer tutoring can result in achievement gains, increases in self-esteem, and enhancement of academic motivation, and that often these effects can be found for both tutor and tutee. Peer tutoring programs are said to work because the tutees are motivated to model the tutor's behavior, and because tutees feel more relaxed with a child tutor, and therefore better able to concentrate.

In their own research Levin, Glass, and Meister (1984) compared the cost effectiveness of peer tutoring programs to three other interventions: reducing class size, increasing the length of the school day, and computer assisted instruction. For the peer tutoring arrangement, upper grade students tutored second and third-grade children needing help in reading and math. The overall effects of peer tutoring were found to be "substantial, with average effect sizes of .97 and .48 for mathematics and reading, respectively" (Levin, Glass, & Meister, 1984, p. 14). With regard to cost effectiveness, the peer tutoring approach was also found to show the best results of the four interventions. In fact, these researchers found that the same cost outlay would provide almost four times as large an effect on reading and mathematics achievement through peer tutoring as through reducing class size or increasing instructional time. Adult tutoring was also found to be a cost effective strategy.

What implications do these results have for the comparison of in-class versus pullout programs? Glass and Smith (1977) suggest that instruction of compensatory pupils in pullout settings reduces the opportunities for faster pupils to tutor slower pupils that could exist in integrated classes. They conclude: "to the extent that peer tutoring is a part of regular classroom instruction its benefits could be foregone in a pullout organization" (Glass & Smith, p. 36). The validity of this argument appears to turn on the phrase "to the extent that peer tutoring is a part of regular classroom instructions its benefits could be foregone in a pullout organization" (Glass & Smith, p. 36). As noted above, the peer tutoring approach described by Levin, Glass, and Meister (1984) did not rely on tutors drawn from the same classrooms. Rather, peers were older students in the same school. Thus, it would appear that pullout programs do not preclude the possibility of peer tutoring. However, the research that is available at this

time, does not allow one to determine whether in-class peer tutoring arrangements would be more effective than those offered in a pullout setting.

Type of Instructor

The final issue to be addressed in this portion of the review is the effect which various types of instructors have on both the instructional setting and performance of students. This issue is important not because certain categories of instructors can function in only one setting. Clearly, instructional specialists and aides, who are responsible for the large majority of compensatory instruction can function in either pullout or in-class settings. Rather, it is important to review the effects which these two types of instructors have independent of setting and to consider whether the roles which they have grown accustomed to playing will have to change if they are asked to move from a pullout setting, where most of them now labor, to the in-class setting.

As noted earlier in this review, instructional specialists provide the large majority of compensatory instruction. Generally, these specialists have a higher level of educational attainment than regular classroom teachers. In general, they also have less experience, and, because of this, they are also likely to receive less pay. Despite the widespread use of these better trained but less experienced teachers in compensatory education programs, the literature tells us surprisingly little about the effect which they have on students. Glass and Smith (1977) report on two studies which claim to show that remedial reading specialists have a positive effect on reading performance (Kiesling, 1971; Flynn, Hass, Al-Salam, 1976). However, neither this review nor the one reported here was able to uncover any additional information on this issue. Perhaps because of this lack of information, Lignon and Doss (1982) have suggested that compensatory funds be used to purchase additional classroom teachers rather than reading specialists, thereby reducing the size of the regular classes. Allington (in press), on the other hand, believes there is a ample support for the continued use of reading specialists. He does feel, however, that reading specialists will be under increasing pressure to justify their positions, particularly to their classroom teacher peers.

Concerning the nature of their services, Eyler (1982) has suggested that the role of compensatory instructional specialists should be redefined to require them to work in in-class settings and serve as resources to the classroom teacher rather than an instructors of specific groups of students. Interestingly, Bean and Eichelberger (1985) have reported that reading specialists perceived that they placed less emphasis on both diagnosis of student weaknesses and teaching specific skills

and more emphasis on working with content teachers when their school district changed from a pullout to an in-class approach. Classroom teachers concurred with specialists and also reported that specialists spent more time working with them. Despite the similarity between what Eyler (1982) proposed and what actually occurred in the Bean and Eichelberger (1985) study, the latter authors reported that teachers and specialists both agreed that reading specialists should focus on working with students with reading problems. Neither group saw the reading specialist as a resource to the classroom teacher, although both groups valued having interaction about specific children.

Shifting our attention to instructional aides, Scheutz (1980) suggested that the evidence about their effectiveness is mixed. Qualitative studies have found that teachers using instructional aides spend more time on instructional activities, deliver more of their instruction in individual and small groups, feel they accomplish more, and feel that instructional aides are helpful. Quantitative studies of their impact on student achievement, however, are less conclusive. In fact, Scheutz reports positive, negative, and no effects attributable to instructional aides in her comprehensive review of the literature. Despite the lack of convincing evidence for their effectiveness, Scheutz provides useful information on the conditions which must be satisfied if aides are to be helpful: (1) teachers who use instructional aides must be genuinely receptive to them; (2) instructional aides must have the necessary literacy and computational skills to perform some useful instructional tasks in the classroom; (3) classroom management plans must be developed to take advantage of the presence of instructional aides; and (4) instructional aides must receive intensive training in the tasks they will be asked to perform.

Viewed as a whole, the literature concerning the impact of specialist teachers and instructional aides on student performance does little to support the case for either pullout or in-class programs. This conclusion may not be surprising, since by this time in the review most readers may have grown accustomed to equivocal results. What may be surprising, however, is the lack of evidence about the effectiveness of instructional specialists and instructional aides regardless of setting. Perhaps Allington (in press) is right in arguing that reading specialists will be called on increasingly to justify their positions. Whether he is or not, research clearly needs to be performed to determine exactly what impact reading specialists have on student performance and whether the continued use of compensatory educations funds to purchase their services is warranted.

Conclusion

The literature on the effect of different instructional settings leads to some firm conclusions, but more generally it leads to insufficiently tested hypotheses about what will or will not improve the performance of compensatory education students. The literature does show that Title I funds were used primarily for instructional services, particularly reading, language arts, and mathematics, and that the major portion of this instruction was delivered in a pullout setting. It also shows that this instruction was provided by instructional specialists, and to a lesser extent instructional aides, who worked with small groups of children and provided more individualized instruction than regular classroom teachers. Although national data on the types of services delivered through Chapter 1 are not yet available, it appears that pullout instruction is still the favored approach. It also appears that the in-class approach is being used more frequently. Critics of pullout have argued that it achieved popularity because it provided clear evidence that districts were complying with Title I regulations, particularly the supplement-not-supplant and the excess costs provisions. Since Federal authorities have specifically suggested under Chapter 1 that models other than pullout should be considered, there is reason to suspect that the use of in-class approach, or perhaps some combination of in-class and pullout approaches, will continue to rise. But is either the in-class or pullout approach preferred on pedagogical grounds?

The research describing the impact of pullout programs on student achievement is generally confusing and often contradictory. In fact, based on what we know at this time, one would be unable to provide convincing evidence for the effectiveness of either strategy. Given these mixed results, one could argue that the widespread use of pullout programs is not justified. Moreover, since there is some evidence to suggest that pullout may result in resegregation, there is further reason to question its widespread use.

Critics of pullout have also suggested that it unnecessarily labels and stigmatizes students, that it reduces communication, cooperation, and coordination between regular and compensatory instructors, that it reduces teacher responsibility for pupil progress, and that valuable content is lost when pullout instruction is received. Despite the value and importance of these criticisms, however, counterarguments also appear to have some value. Labeling and stigmatization can occur in in-class settings as well as in pullout settings. Moreover, it may be that it is not the setting itself which aggravates a compensatory education student's feelings of being different, but the sensitivity or insensitivity of teachers

operating within the setting (Noddings, 1978). It also appears that even though an in-class program makes it easier and more likely for communication, cooperation, and coordination to occur, it does not guarantee that they will. Additionally, there is some evidence to suggest that certain types of teachers are just not able to work together in a single classroom and that joint planning may take place in much the same way in in-class programs as in pullout programs, before school, during recess, during lunch, and after school. Because some teachers may not be able to accommodate another teacher in the same classroom, the issue of teacher autonomy and responsibility for student progress is also not automatically resolved by in-class programs. Perhaps, as suggested by Kennedy (1978), the key to good coordination between Chapter 1 and regular instruction is not the setting for instruction but rather the quality of the joint planning that occurs, the amount of decision-making power given to teachers and specialists by their administrators, and the flexibility in scheduling allowed by the environment.

With regard to the content lost issue, it is clear that some instruction is sacrificed when pullout compensatory instruction is received. It is also clear that valuable instructional time is lost in the process of moving to and from the pullout environment. It is not clear, however, what types of instruction, if any, would be lost if compensatory instruction were delivered in-class. It is also not clear whether the interruptions resulting from students being pulled out for instruction are less harmful than the confusion resulting from two teachers working in the same classroom. More research needs to be done on these issues.

Bowing now to the other side of the aisle, those who favor pullout programs herald the virtues of instructional specialists and the opportunities for small-group instruction which they afford. Unfortunately, the literature does little to resolve the long term debate on these important issues. Surprisingly, we know very little about the impact which instructional specialists or aides have on student performance. Thus, we are not sure whether it would be preferable on pedagogical grounds to eliminate specialists and aides and use the released funds to reduce class size (Lignon and Doss, 1982). Further, since the in-class models which are being implemented use instructional specialists or aides as service providers, the type of instructor clearly does not distinguish the two approaches. It does appear, however, that the groups involved in in-class and pullout programs have been and will continue to be different. The group sizes for pullout programs have been appreciably smaller than the class sizes in which pullout students receive their regular instruction. Moreover, individualized instruction has been more prevalent in pullout programs. Were instructional specialists and aides to be

shifted to the regular classroom, however, these "advantages" of pullout would most likely be lost. Regarding these "advantages", however, it must be reported that the literature on the former is mixed while the literature on the latter indicates that individualization may not be a key variable in our understanding of the instructional process.

Despite all of its confusions and contradictions, the literature does offer some reasonable advice to those charged with the delivery of compensatory instruction. Based on what we know at this time, it is safe to conclude that setting is not directly responsible for student outcomes and that it is "the issue of effective practices, not setting, that deserves the attention of educators" (Leinhardt & Pallay, 1982, p. 557). This implies that they will have to consider, perhaps more seriously than in the past, what goes on within these settings and how regular and compensatory instruction can be woven together to improve student performance.

Like Allington (in press), it appears reasonable to conclude that the effective schools literature stimulated by the work of Edmonds (1979), Brookover et al. (1978), and others would be a good starting point for this renewed emphasis on effective practices. Districts and schools must be committed to the instructional models and programs they adopt, there must be agreement on goals and objectives, principals must assume a leadership role in the determination of what instruction should be offered, how it should be delivered and whether or not it is delivered, administrators and teachers must have high expectations for their students and must communicate these high expectations to them, there must be frequent monitoring and feedback of student performance, and there must be effective teacher training. In addition to these issues and concerns, the following variables or conditions of learning described in Leinhardt and Palley's (1982) excellent review should be emphasized: (1) small class sizes; (2) large content overlap between teaching/learning activities and criterion tasks; (3) mastery learning, meaning clear goal statements and regular monitoring of student progress; (4) increased time spent in cognitive activities; (5) reasonably rapid pacing of instruction; (6) using a formal management system which encourages task orientation and successful completion; and (7) increased teacher instructional time. With increased attention to these issues and concerns, and with improved cooperation between regular and compensatory instruction, it is possible that future evaluations of compensatory education will be able to present less equivocal and more positive results than have been found in the past.

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